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Winter Survey 1999

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1.0 INTRODUCTION

In 1991, the Peace/Williston Fish and Wildlife Compensation Program (PWFWCP) initiated a multi-year study of woodland caribou in the Omineca Mountains. Phase 1 of the project involved radio-collaring and monitoring 30 caribou over 3 years to determine their seasonal habitat selection and movements. The data revealed two distinct caribou populations resided in the Omineca Mountains: the Wolverine Caribou Herd (WCH) in the south, and the Chase Caribou Herd (CCH) in the north (Wood 1996, Wood and Terry 1999). Phase 2 of the Omineca Caribou Study spanned from 1994-97, and focused on the seasonal use of forested habitats by radio-collared caribou in the WCH (Terry and Wood 1999).

Previous total count inventories of caribou wintering in alpine habitat on the Wolverine Range were conducted in 1989 (Hatler 1989), 1993 (Wood 1993) and 1996 (Wood 1998). Since no caribou were marked (i.e., fitted with radio or GPS collars) prior to 1991, a mark/resight correction factor could not be calculated for the 1989 survey results (214 caribou sighted) to derive a reliable population size estimate for the entire WCH. Subsequent to 1991, collared animals were available for mark/resight population estimation. However, during the 1993 survey, none of the 12 collared caribou were sighted (only 66 caribou were located, primarily due to poor weather conditions (Wood 1993). Sightability was excellent during the 1996 survey of the Wolverine Range: 204 caribou were sighted, including all 13 collared caribou in the surveyed area. However, an additional 10 collared caribou in the WCH were located outside the survey area on other alpine ranges and in timbered habitats. When the survey results were extrapolated to the rest of the herd, the resulting population estimate for the WCH was 262 to 580 caribou (Wood 1998). A moderately high bull:cow ratio and low number of calves observed on the Wolverine Range suggested that more of the cow/calf groups may have been wintering elsewhere and were therefore missed on the survey (Wood 1998).

Since radio and GPS-collared caribou were still available for mark/resight population estimation over the winter of 98/99, another total count inventory of caribou using alpine habitat on the Wolverine Range and other alpine ranges to the southwest was conducted in February 1999. The primary objective was to determine the number and age/sex composition of observed caribou to provide an additional assessment of WCH demographics and is the subject of this report.

2.0 SURVEY AREA AND METHODS

2.1 Survey Area

The Wolverine Mountain Range in the southern Omineca Mountains lies adjacent and parallel to the western shore of the Williston Reservoir in north-central British Columbia (Figure 1). This range and smaller mountains to the southwest lie within the Southern Omineca Mountain and Manson Plateau ecosections of the Omineca Mountains ecoregion (Demarchi 1995), on the lee side of the Omineca Mountains. The upper elevations (> 1,400 m) of the ranges are dominated by Englemann Spruce - Subalpine Fir (ESSF) parkland and scrub below 1,500 m, and Alpine Tundra (AT) above (DeLong et al. 1994). The survey area included alpine and subalpine habitat (from treeline to summit) on the Wolverine Range, Mount Gillis, Baldy Mountain, Plughat Mountain, and the Germansen Range. These ranges are characterized by gently rounded windswept alpine habitat with low to moderate slopes providing suitable alpine wintering habitat for caribou.

2.2 Survey Methods

The inventory was conducted using a Bell 206 helicopter and a 3-person crew. All alpine areas were thoroughly searched in accordance with standard inventory methodology (RIC 1997). Where the distance between subalpine and height of land was such that animals at either extreme could be missed if surveyed in a single sweep, two or three parallel transects were flown at increasing contour intervals.

The navigator (Fraser Corbould, PWFWCP) searched for, counted and classified animals, and recorded the flight line and animal locations on 1:250,000 topographic maps. The two rear seat observers also searched for and classified animals. Caribou were classified to a modified level 3 RIC standard, identifying calves, cows, yearlings, class I bulls, class II bulls, and mature bulls (class II or III bulls without antlers) based on body size, antler presence and characteristics, and presence/absence of black vulval patch. Radio-collars observed on individual caribou were also noted. The radio frequency of each collar was identified at the time of observation using a Telonics TR-2/TS-1 receiver/scanner unit. The navigator recorded latitude and longitude co-ordinates for each group of animals located using the helicopter's on-board Global Positioning System (GPS) unit; these were later converted to UTM co-ordinates Where multiple groups of caribou were located within close proximity (e.g., 100-300 m apart), only one GPS location for the groups was obtained.

Figure 1. Survey area for the Wolverine Caribou Herd winter survey, February 1999: Wolverine Mountain Range (1), Germansen Mountain Range (2), Baldy Mountain (3), and Mount Gillis (4), in the Williston Reservoir watershed, north-central British Columbia.

The rear left seat observer (Jim Tuck, BC Environment, 23 February; Line Giguere, LG Wildlife Consulting, 25 February; Landon Wilson, Pacific Slope Consulting, 26 February) recorded species, group number and size, and animal classifications. The rear right seat observer (Pamela Hengeveld, PWFWCP) recorded the habitat, aspect, and slope of animal locations, and took photographs. After each mountain range was flown, radio-telemetry was used to confirm that no collared caribou were missed during the survey.

3.0 RESULTS AND DISCUSSION

3.1 Survey Details

The inventory was conducted between 23 and 26 February 1999, in conjunction with a PWFWCP moose inventory along the Omineca, Nation, and Ospika Rivers (Hengeveld 2000). As such, the ranges were surveyed in portions to optimize helicopter time and refuelling stops (Table 1). The total caribou survey time was 6 hrs 3 min excluding refuelling and ferry time; the total helicopter time including the latter was 8 hrs 51 min.

Temperature's ranged from -4 to -10 degrees C during the survey period, with light winds and variable scattered cloud cover. All ranges exhibited 100% snow cover, with deeper snow apparent north of Mt. Porter in the Wolverine Range, and on the Germansen Range. Increasing cloud in the late afternoon of 25 February restricted vision at 1800 m on Baldy Mountain, and completely obscured the summit of Mount Gillis. Favourable conditions on 26 February permitted a complete survey of Mount Gillis.

Table 1. Survey date and search time for each range surveyed during the Wolverine Caribou Herd inventory, February 1999.

Area Surveyed	Date	Survey Times	Total Heli Time
Wolverine Range	23 February	1001-1212	2 hrs 11 min
Wolverine Range	23 February	1325-1546	2 hrs 21 min
Wolverine Range	23 February	1621-1639	0 hrs 18 min
Plughat Mountain	25 February	1459-1510	0 hrs 11 min
Germansen Range	25 February	1512-1618	1 hrs 6 min
Baldy Mountain	25 February	1623-1625	0 hrs 2 min
Mount Gillis	25 February	1630-1647	0hrs 17 min
Mount Gillis	26 February	1224-1237	0hrs 13 min
Total			6 hrs 3 min

3.2 *Caribou Observations*

Ninety-one (91) woodland caribou sighted during the survey: 77 on the Wolverine Range (including 6 radio-collared caribou), 13 on Plughat Mountain and one lone male on Mount Gillis (Figure 2, Table 2, Appendix A). No caribou were observed on the Germansen Range or on Baldy Mountain. Both the bull:cow (81:100) and calf:cow (30:100) ratios observed on the survey were high (Table 3), however, only a small proportion of the population was surveyed (as indicated by the proportion of collared animals in the survey area: 6 of 20).

Of the 91 caribou observed, 15 (groups 3, 12, 16, and 20 on the Wolverine Range) were located in open parkland habitat above treeline; the other 62 were sighted in alpine habitats. No caribou tracks leading from the alpine into lower-elevation timber were observed on the Wolverine Range, but potential caribou tracks extended from a knoll down into timber at the north end of the Germansen Range. An extensive network of caribou trails was observed on the unnamed lake south of Blue Lake.

There were 20 radio-collared caribou in the Wolverine Caribou Herd in February 1999: 12 VHFcollars and 8 GPS collars (Line Giguere, Northern Caribou Project, pers, comm; Chris Johnson, pers. comm). Sightability was excellent during the survey: 6 of 6 radio-collared caribou in the surveyed alpine areas were observed. This rendered the Lincoln-Petersen mark-recapture estimator unnecessary, and resulted in a population estimate of 91 caribou for the surveyed area. However, the majority of collared caribou (n=12) were outside the surveyed areas (as confirmed by radio-telemetry immediately after each range was surveyed), primarily in low elevation forests or on ranges further west or north, thus an accurate population estimate for the herd could not be obtained.

In March 1996, 204 caribou were observed in the alpine on the Wolverine Range alone (Wood 1998). This indicates that although sightability and survey conditions were excellent during the February 1999 inventory, the number of caribou observed in the alpine on the Wolverine, Germansen, Plughat, Baldy and Gillis Ranges (91) was low. Subsequent radio-telemetry confirmed that the majority of collared animals were using lower elevation forested habitats at the time of the survey.

Figure 2. Locations of woodland caribou groups observed during the Wolverine Caribou Herd inventory, 23-26 February, 1999. Circled numbers indicate group size.

We recommend that future caribou surveys using collared animals for mark-resight population estimation should only be undertaken when the majority of collared caribou have moved up to open alpine habitats.

Table 2. Locations and classifications[a] of woodland caribou observed during the Wolverine Caribou Herd inventory, 23-26 February 1999.

Grp		Radio-	Ad M			Ad F	Calf			
#	Location	collars	I	II	mat		M	F	uncl	Total
3	Wolverine Range (south)			1	1	1				3
4	Wolverine Range (south)				3					3
5	Wolverine Range (south)					1	1			2
6	Wolverine Range (south)	151.900				1			1	2
7	Wolverine Range (south)		1			1				2
11	Wolverine Range (north)		1			5		1		7
12	Wolverine Range (north)	150.292				1				1
13	Wolverine Range (north)		2			1		1		4
14	Wolverine Range (north)	150.121 150.361 150.230	1		2	8				11
15	Wolverine Range (north)		1		1	2	1		1	6
16	Wolverine Range (north)	150.551	2	2	1	1			1	7
17	Wolverine Range (north)			1		5	2			8
18	Wolverine Range (north)		1			3		1		5
19	Wolverine Range (north)					3	1			4
20	Wolverine Range (north)			2		1			1	4
21	Wolverine Range (north)				3					3
22	Wolverine Range (north)		2			2		1		5
	Wolverine Range total		*11*	*6*	*11*	*36*	*5*	*4*	*4*	*77*
24	Plughat Mountain		2	2	2	1				13
28	Mount Gillis				1					1
TOTAL			13	8	14	43	5	4	4	91

Ad M (adult male); I (class I male); II (class II male); mat (mature males without antlers, includes class II and III bulls); Ad F (adult female); M (male); F (female); uncl (unclassified).

Table 3. Sex and age composition of woodland caribou observed during the Wolverine Caribou Herd inventory, 23-26 February 1999.

Bulls	Cows	Calves	Total	Bulls/ 100 Cows	% Bulls[a]	Calves/ 100 Cows	% Calves[b]
35	43	13	91	81:100	45%	30:100	14%

[a] % males in adult population (n= 78)

[b] % calves in entire population (n= 91)

3.3 *Other Ungulate Observations*

Eighteen (18) mountain goats *(Oreamnus americanus)* were also observed during the survey: 13 on the Wolverine Range and 5 on the Germansen Range (Table 4, Appendix A). Fourteen goats (groups 1, 2, 8, and 26) were located in rocky openings in open parkland and subalpine fir forest. Four goats (groups 9, 10, 24 and 25) were sighted on alpine cliffs and slopes.

Table 4. Locations and classifications[a] of mountain goats incidentally observed during the Wolverine Caribou Herd inventory, 23-26 February 1999.

Group	Location	Ad M	Ad F	Yrlg	Kid	Total
1	Wolverine Range (south)	2				2
2	Wolverine Range (south)		2		2	4
8	Wolverine Range (south)		2	2	1	5
9	Wolverine Range (south)	1				1
10	Wolverine Range (north)			1		1
25	Germansen Range	1				1
26	Germansen Range	1				1
27	Germansen Range		1	1	1	3
TOTAL		5	5	4	4	18

[a] Ad M (adult male); Ad F (adult female); Yrlg (yearling).

5.0 ACKNOWLEDGEMENTS

Dean Scarrow (Northern Mountain Helicopters) piloted the helicopter chartered for this survey. Fraser Corbould and Pamela Hengeveld (PWFWCP) conducted the survey with additional assistance from Jim Tuck (BC Environment, Mackenzie), Line Giguere (LG Wildlife Consulting, Mackenzie), and Landon Wilson (Pacific Slope, Mackenzie).

Location data for VHF-collared caribou were provided by Line Giguere, courtesy of the Northern Caribou Project (Slocan Group, Abitibi Consolidated, and Forest Renewal BC; Mackenzie). Location data for GPS-collared caribou were provided by Chris Johnson (Prince George).

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APPENDIX A.

Detailed survey data for the Wolverine Caribou Herd Inventory, 23-26 February 1999.

Woodland Caribou Group Locations:

								Classification										
		Group	Latitude		Longitude		Total #	Calf			Yearling			Ad F	Ad M			
Location	Date	#	Deg.	Min.	Deg.	Min.	Caribou	M	F	Uncl	M	F	Uncl		I	II	III	*Mat	Comments
Wolverine Range	23 Feb 99	3	55	43.88	124	22.80	3							1		1		1	
Wolverine Range	23 Feb 99	4	55	43.76	124	23.72	3											3	
Wolverine Range	23 Feb 99	5	55	76.59	124	23.54	2	1						1					
Wolverine Range	23 Feb 99	6	55	45.82	124	18.01	2			1				1					collar 151.900
Wolverine Range	23 Feb 99	7	55	49.02	124	14.91	2				1			1					
Wolverine Range	23 Feb 99	11	55	50.80	124	20.42	7		1		1			5					
Wolverine Range	23 Feb 99	12	55	52.29	124	21.81	1							1					collar 150.290
Wolverine Range	23 Feb 99	13	55	50.30	124	20.37	4		1					1	2				
Wolverine Range	23 Feb 99	14	55	52.37	124	23.82	11							8		1		2	collars 150.121, .230 & .361
Wolverine Range	23 Feb 99	15	55	53.33	124	21.32	6	1		1				2	1			1	
Wolverine Range	23 Feb 99	16	55	53.48	124	20.29	7			1	1			1	1	2		1	collar 150.551
Wolverine Range	23 Feb 99	17	55	53.60	124	23.80	8	2						5		1			
Wolverine Range	23 Feb 99	18	55	53.63	124	23.26	5		1					3	1				
Wolverine Range	23 Feb 99	19	55	54.09	124	22.48	4	1						3					
Wolverine Range	23 Feb 99	20	55	55.74	124	20.55	4			1				1	2				
Wolverine Range	23 Feb 99	21	55	55.57	124	25.71	3											3	
Wolverine Range	23 Feb 99	22	55	59.07	124	28.75	5		1					2	2				
Total		17					77	5	4	4	3	0	0	36	9	5	0	11	
Plughat Mtn.	25 Feb 99	23	55	45.34	124	49.50	13				1	1		6	1	2		2	
Germansen Rg.	25 Feb 99	none					0												
Baldy Mtn.	25 Feb 99	none					0												
Mt. Gillis	25 Feb 99	27	55	32.94	124	24.42	1											1	
Total		2					14	0	0	0	1	1	0	6	1	2	0	3	
Grand Total		19					91	5	4	4	4	1	0	42	10	7	0	14	

*Mat = mature bulls without antlers

APPENDIX A.

Detailed survey data for the Wolverine Caribou Herd Inventory, 23-26 February 1999.

Mountain Goat Group Locations:

Location	Date	Group #	Latitude Deg.	Latitude Min.	Longitude Deg.	Longitude Min.	Total # Goats	Classification Kid	Sub Ad F	Ad M	U Ad
Wolverine Range	23 Feb 99	1	55	45.15	124	25.60	2			2	
Wolverine Range	23 Feb 99	2	55	45.15	124	25.60	4	2	2		
Wolverine Range	23 Feb 99	8	55	46.65	124	24.79	5	1	2 2		
Wolverine Range	23 Feb 99	9	55	46.54	124	22.14	1			1	
Wolverine Range	23 Feb 99	10	55	49.24	124	20.40	1		1		
Total							13	3	3 4	3	0
Germansen Rg.	25 Feb 99	24	55	39.89	124	49.40	1			1	
Germansen Rg.	25 Feb 99	25	55	39.07	124	49.75	1			1	
Germansen Rg.	25 Feb 99	26	55	38.24	124	53.59	3	1	1 1		
Total							5	1	1 1	2	0
Grand Total							9	2	2 2	3	0